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FEDERAL-STATE
COOPERATIVE SNOW SURVEYS and IRRIGATION WATER FORECASTS

for

MONTANA

May 1,1949

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U. S. DEPARTMENT OF AGRICULTURE

by

Montana Agricultural Experiment Station
and
Division of Irrigation, Soil Conservation Service
United States Department of Agriculture

in cooperation with

U.S.Forest Service •••• U.S.National Park Service •••• U.S.Bureau of Reclamation •••• U.S.Geological Survey
and State Engineer of Montana

FEDERAL-STATE COOPERATIVE
SNOW SURVEY AND IRRIGATION WATER FORECASTS

FOR

MONTANA

Upper Missouri and Upper Columbia River

Basins

Report Prepared
by

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and

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Division of Irrigation
Soil Conservation Service

and

Montana Agricultural Experimental Station
Bozeman, Montana

MONTANA

Summary of Snow Storage Conditions

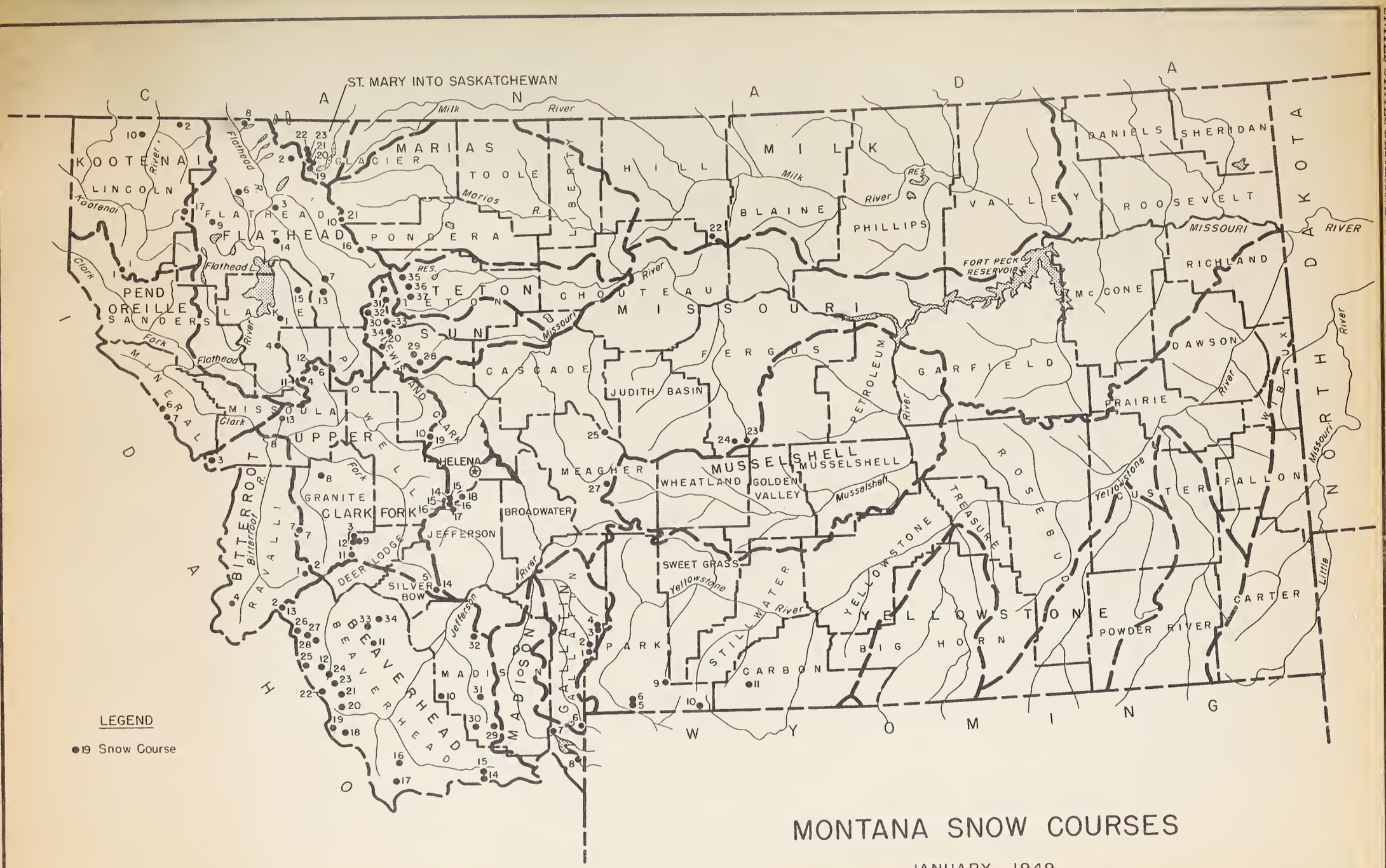
Snow survey measurements made on or about May 1, indicate that there will be a "GOOD" supply of water for irrigation use this season, with sustained flows late this summer from ground water.

Although the snow pack has diminished rapidly from the lower elevations the stream flow this past month has only been slightly above the average. The loss in water content from April 1 measurements on all courses has been extremely large and has not reflected itself in an abnormally high stream discharge. The high elevation courses are maintaining an above average water content despite the unusual loss in water during the month. The Columbia River Basin measurements indicate a higher percentage of average than the Missouri Basin. Water Content on the Kootenai, Flathead, Pend Oreille, and Bitterroot appear to be somewhat higher than the Upper Clark Fork. Indications are that these basins will have a good supply of water for late summer use.

Ground water measurements throughout the state indicate a great rise in water table above measurements taken last year at this date. A good portion of this water will make itself evident in sustained flow during the summer months.

Precipitation has been below average for the state during the month of April and average temperatures have been from 5 to 10 degrees above average for the month.

Reservoir storage is good for this time of year and most reservoirs have been drawn down to receive the anticipated flow of water from the snow pack at high elevations.



UNITED STATES DEPARTMENT OF AGRICULTURE
REGION 7
SOIL CONSERVATION SERVICE
MONTANA, 7-L-10723

INDEX TO MONTANA SNOW COURSES

Name	Montana No.	Elev.	Location Sec. / Lat.	Twp.	Range / Long.	Record Began	Measuring Dates[a]	Measured By[b]
MISSOURI RIVER DRAINAGE								
JEFFERSON RIVER								
White Pine Ridge	16	8850	18	14S	9W	1948	3,4	1
Limekiln	17	6950	5	15S	9W	1948	3,4	1
Lakeview Ridge	14	7400	27	14S	2W	1948	3,4,5	9
Lakeview Canyon	15	6930	26	14S	2W	1948	3,4,5	9
Trail Creek	18	7050	15	10S	15W	1948	3,4	1
Lemhi Pass	19	7460	9	10S	15W	1948	3,4	1
Terrell Creek	20	6650	14	9S	15W	1948	3,4	1
Selway Junction	21	6800	27	8S	15W	1948	3,4	1
Gold Stone	22	8100	11	8S	16W	1948	3,4	1
Bloody Dick	23	7600	12	8S	16W	1948	3,4	1
Jahnke Creek	24	7340	25	7S	16W	1948	3,4	1
Minar Forks	25	7300	24	6S	17W	1948	3,4	1
Minar Lake	12	6720	10	6S	16W	1945	3,4,5	1
Big Hole Pass	26	7440	28	3S	15W	1948	3,4	1
Below Big Hole Pass	27	6900	24	3S	16W	1946	3,4	1
East Boundary	28	6700	22	3S	17W	1948	3,4	1
Gibbons Pass	13	7100	4	2S	15W	1934	2,3,4,5	1,2
Elk Horn	11	8450	15	4S	12W	1934	3,4,5	2
Anderson Meadow	33	7000	18	3S	12W	1948	3,4	1
Wise River	34	6300	15	2S	12W	1948	3,4	1
Upper Cottonwood	29	8400	30	10S	2W	1948	3,4	1
Cottonwood	30	5900	25	10S	3W	1948	3,4	1
Vigilante	31	6125	28	9S	3W	1948	3,4	1
Flashlight	10	6950	22	8S	7W	1945	3,4,5	1
Tobacco Root	32	6900	18	4S	3W	1948	3,4	1
MADISON RIVER								
Bebgen	7	6550	22	11S	3E	1934	1,2,3,4,5	2
West Yellowstone	8	6700	34&35	13S	5E	1934	1,2,3,4,5	2
GALLATIN RIVER								
Devil's Slide	1	6100	14	5S	6E	1935	3,4,5	2,6
Hood Meadow Extension	2	6600	22	4S	6E	1934	3,4,5	2,6
Mystic Lake #1 & #2	3	6600	30	3S	7E	1935	1,2,3,4	6,7
New World Trail	4	6700	24	3S	6E	1939	3,4	6,7
21 Mile	6	7150	1	11S	5E	1934	2,3,4,5	2
YELLOWSTONE RIVER								
Crevice #1	5	8400	29	9S	9E	1935	3,4	1
Crevice #2	6	8150	26	9S	9E	1935	3,4	1
Independence	9	8000	22	7S	12E	1940	3,4	6
Cooke City	10	7400	25	9S	14E	1937	1,2,3,4,5	5
Camp Senia	11	7590	2	6S	18E	1938	3,4	1
MUSSELSHELL RIVER								
Grasshopper	27	7000	19	9N	8E	1936	3,4	1,6
MISSOURI RIVER MAIN STEM								
Pipestone Pass	14	7200	11	1N	7W	1938	2,3,4,5	1
Tenmile Creek, Lower	15	6250	13	8N	6W	1935	1,2,3,4,5	2
Tenmile Creek, Middle	16	6800	13	8N	6W	1934	1,2,3,4,5	2
Tenmile Creek, Upper	17	8000	19	8N	6W	1935	1,2,3,4,5	2
Chessman Reservoir	18	6200	2	8N	5W	1936	1,2,3,4,5	2
Stemple Pass	19	6900	16	13N	7W	1934	3,4,5	2
Crystal Lake	24	6100	24	12N	17E	1941	3,4	1,6
Kings Hill	25	7950	35	13N	7E	1937	3,4,5	2
Grasshopper	27	7000	19	9N	8E	1938	3,4	1,6
SUN RIVER								
My Lake	30	7300	21	23N	12W	1949	3,4	1
Wrong Creek Ridge	31	6800	17	25N	10W	1949	3,4	1
Wrong Creek	32	5700	32	25N	10W	1949	3,4	1
Gates Park	33	5300	31	24N	10W	1949	3,4	1
Cabin Creek	34	5400	33	23N	10W	1949	3,4	1
S Bull	28	5600	36	20N	10W	1948	3,4	1
Bench Mark	29	5500	9	20N	10W	1948	3,4	1
Goat Mountain	20	7000	21	22N	10W	1934	3,4	2
TETON RIVER								
Fright Creek	35	6000	13	26N	10W	1948	3,4	1
West Fork	36	6000	6	25N	9W	1948	3,4	1
Waldron	37	5600	16	29N	5W	1948	3,4	1
MARIAS RIVER								
Marias Pass	21	5250	48°19'		113°21'	1934	1,2,3,4,5	2
MILK RIVER								
Rocky Boy	22	5200	15	28N	16E	1942	3,4	6

Name	Montana No.	Elev.	Location Sec. / Lat.	Twp.	Range / Long.	Record Began	Measuring Dates[a]	Measured By[b]
COLUMBIA DRAINAGE								
KOOTENAI RIVER								
Baree Mountain	1	6000	1	25N	31W	1937	4,5	1
Bluebird Basin	2	6800	24	37N	26W	1937	4,5	1
Red Mountain	10	6000	4	36N	29W	1937	3,4,5	1
UPPER CLARK FORK								
Chessman Reservoir	1	6200	2	8N	5W	1936	1,2,3,4,5	2
East Fork Ranger Station	2	5400	16	2N	17W	1937	4	1
Intergaard	3	6450	6	5N	13W	1939	2,3,4	3
North Fork Jocko	4	6330	3	17N	17W	1941	3,4	4
Pipestone Pass	5	7200	11	1N	7W	1938	2,3,4,5	1
Rainy Lake	6	4300	11	16N	16W	1947	3,4,5	1
Skalkaho Summit	7	7258	30	6N	17W	1937	4,5	1
Slide Rock Mountain	8	7100	26	10N	16W	1937	4	1
Southern Cross	9	6500	9	5N	13W	1939	2,3,4	3
Stemple Pass	10	6900	16	13N	7W	1934	3,4,5	2
Storm Lake No. 2	11	7780	19	4N	13W	1939	4,5	1
Stuart Mill	12	6500	19	5N	13W	1939	2,3,4	3
Stuart Mountain #1	13	7400	6	14N	16W	1936	3,4,5	1
Tenmile Creek, Lower	14	6250	13	8N	6W	1935	1,2,3,4,5	2
Tenmile Creek, Middle	15	6800	13	8N	6W	1934	1,2,3,4,5	2
Tenmile Creek, Upper	16	8000	19	8N	5W	1935	1,2,3,4,5	2
BITTERROOT RIVER								
East Fork Ranger Station	1	5400	16	2N	17W	1937	4	1
Gibbons Pass	2	7100	4	2S	15W	1934	2,3,4,5	1,2
Mud Creek Pasture	3	4500	24	11N	24W	1937	2,3,4,5	1
Nezperce Camp	4	5580	19&20	1S	23W	1937	3,4	1
Skalkaho Summit	7	7258	30	5N	17W	1937	4,5	1
Stuart Mountain #1	8	7400	6	14N	16W	1936	3,4,5	1
FLATHEAD RIVER								
Big Creek	1	6750	6& 7	22N	18W	1941	4,5	4
Cattle Queen	2	4700	7	35N	17W	1939	3,4	5
Desert Mountain	3	5600	24	31N	19W	1937	4,5	1
Elk Mountain	4	6750	1	20N	19W	1941	3,4	4
Goat Mountain	5	7000	47°39'		112°54'	1934	3,4	2
Hell Roaring Creek Divide	6	5770	35	32N	22W	1942	4,5	1
Horse Ridge c	7	5200	8	25N	15W	1937	4,5	1
Kishenehn	8	4300	7	37N	21W	1946	4,5	5
Logan Creek	9	4300	34	30N	24W	1937	3,4	1
Marias Pass	10	5250	46°19'		113°21'	1934	1,2,3,4,5	2
North Fork Jocko	11	6330	3	17N	17W	1941	3,4,5	4
Rainy Lake	12	4300	11	16N	16W	1947	3,4,5	1
Spotted Bear Mountain	13	7000	23	25N	15W	1948	3,4	1
Strawberry Lake	14	6500	11	26N	19W	1948	3,4	1
Trinkus Lake	15	6500	9	25N	17W	1948	3,4	1
Snow Laboratory Station #13	16	5240	10	29N	14W	1946	1,2,3,4,5	2
Brush Creek	17	5000	13	30N	26W	1937	3,4	1
PEND OREILLE RIVER								
Baree Mountain	1	6000	1	25N	31W	1937	4,5	1
Freezeout Summit	6	7000	21	15N	27W	1937	3,4	1
Hoodoo Creek	7	6200	9&16	14N	27W	1937	3,4	1
SASKATCHEWAN RIVER DRAINAGE								
ST. MARY RIVER								
Piegan Pass #6	19	6500	48°45'		113°42'	1922	b	2,8
Piegan Pass #4	20	5000	48°46'		113°40'	1922	b	2,8
Mount Allen	21	7000	48°44'		113°40'	1922	b	2,8
Ptarmigan #8	22	5800	48°50'		113°42'	1922	b	2,8
Iceberg Lake	23	6000	48°50'		113°42'	1922	b	2,8

a. Numerals 1,2,3,4, and 5 refer to January 1, February 1, March 1, April 1, and May 1.

b. Numerals refer to Agency that secures the snow survey, as follows:

1. U. S. Forest Service
2. U. S. Geological Survey and U. S. Engineer Corps
3. Montana Power Company
4. U. S. Indian Service
5. National Park Service
6. Montana Experiment Station
7. City of Bozeman
8. Dominion Water and Power Bureau
9. U. S. Fish and Wildlife Service

c. Discontinued 1943-1947

STORAGE IN RESERVOIRS OF MONTANA

MISSOURI RIVER BASIN — AS OF APRIL 30

RESERVOIR	Location or on Diversion from	Usable Capacity	Contents This Month End	Contents April 30 1948
Lake Sewall	Missouri	37,800	27,120	23,6[illegible]0
Hauser Lake	Missouri	52,090	37,690	31,440
Ft. Peck Res.	Missouri	19,000,000	13,330,000	13,790,000
Ruby Res.	Ruby	38,500		
Harrison Lake	Willow Cr.	17,760		
Hebgen Res.	Madison River	345,000	224,300	185,300
Madison Res,	Madison River	41,000	37,480	36,390
Smith River Res.	Smith River	10,700		
Gibson Res.	N. Fk. Sun River	105,000	56,120	71,490
Willow Creek	N. Fk. Sun-Willow Cr.	32,300	20,830	19,060
Pishkun Res.	N. Fk. Sun River	32,000	25,550	20,840
Lower Two Medicine L.	Two Medicine River	14,000	0	0
Four Horns Res.	Badger Creek	20,000	10,900	7,420
Birch Creek Res.	Birch Creek	30,000		27,210
Lake Francis Res.	Birch Creek	112,000		107,950
Ackley Lake	Judith River	5,820		4,810
Durand Res.	N. Fk. Musselshell	7,010	5,760	7,030
Dead Man Basin	Musselshell River	52,500		
Martinsdale Res.	So. Fk. Musselshell	23,100	13,150	
Fresno Res.	Milk River	127,200	67,520	131,900
Nelson Reservoir	Milk River	66,800		33,860
Mystic Lake	W. Rosebud Creek	20,800	2,650	2,310
Cooney Res.	Red Lodge Creek	27,500	11,790	10,720
Tongue Res.	Tongue River	73,900	8,320	24,880
Sherburne Lake Res.	Swiftcurrent Creek	66,100		
Lake Helena	Missouri River	10,450	3,890	1,980
COLUMBIA RIVER BASIN				
Georgetown Lake	Flint Creek	31,000	22,140	20,970
E.Fk. Rock Cr. Res.	E. Fk. Rock Cr.	16,040		
Nevada Cr. Res.	Nevada Creek	12,600	10,820	
W.Fk. Bitterroot Res.	E.Fk. Bitterroot	31,700	15,000	20,500
Como Lake	Rock Creek	34,800		
Flathead Lake(Sommers)	Flathead River	1,791,000	1,017,000	948,400
Little Bitterroot	Little Bitterroot	37,100*	36,120	25,620
Dry Fork Res.	Dry Fork Creek	6,700*	5,420	5,560
Mission Valley Reservoirs	Mission Valley (Flathead River)	105,000**	39,710	60,720

* Comprise two reservoirs on Dry Creek.
* Comprise two reservoirs on Little Bitterroot River.
** Comprise nine small reservoirs on Mission Valley Project Indian Reclamation Service.

PRELIMINARY ESTIMATES OF RUNOFF AT A NUMBER OF REPRESENTATIVE GAUGING STATIONS IN MONTANA

Name of Stream	Period and Volume Forecast In Acre Feet	
MISSOURI BASIN	May - June	July-August-Sept.
Gallatin River at Gateway	249,000	92,436
Hyalite Creek at Ranger Station	18,000	9,500
Madison River at West Yellowstone	92,200	72,500
North Fork Musselshell at Delpine	4,500	2,200
Yellowstone River at Corwin Springs	1,250,000	800,000
Clark Fork River at Chance	52,000	May-June-July
Red Lodge River above Cooney Reservoir	22,500	10,000
Missouri River at Fort Benton	2,200,000	------
COLUMBIA RIVER BASIN		
	April-June	April-September
Bitterroot River at Darby	468,000	613,000
Clark Fork above Missoula	1,433,000	2,062,000
Clark Fork below Missoula	2,500,000	3,430,000
Clark Fork at St. Regis	3,300,000	4,440,000
Flathead River at Columbia Falls	5,100,000	7,218,000
Flathead River at Polson	5,300,000	8,650,000
Clark Fork River at Plains	8,865,000	12,460,000
Clark Fork River at Heron	11,330,000	14,200,000

Note: All estimated volumes subject to a discrepa ncy of plus or minus 10 to 15%.

U.S. DEPARTMENT OF COMMERCE, WEATHER BUREAU
STATE OF MONTANA, MONTHLY PRECIPITATION FOR
OCTOBER, 1948 - APRIL 30, 1949

STATIONS	OCTOBER 1948		NOVEMBER 1948		DECEMBER 1948		JANUARY 1949		FEBRUARY 1949		MARCH 1949		APRIL 1949	
	Pre.	Dep.	Pre.	Dep.	Pre.	Dep.	Pre.	Dep.	Pre.	Dep.	Pre.	Dep.	Pre.	Dep.
WEST OF DIVIE														
Butte	.36	-0.43	.41	0.00	0.94	.50	0.50	0.10	0.91	.49	.64	0.00	0.64	-.42
Deer Lodge	..06	-0.62	.77	0.22	1.14	.63	0.53	-0.06	0.86	.43	.08	-0.53	0.50	-.32
Hamilton	.44	-0.47	1.53	9.72	1.32	.61	0.22	-0.55	1.57	.85	1.09	0.50	0.10	-.77
Kalispell	.40	-0.66	1.50	0.15	1.02	-.43	1.07	-0.50	1.28	.17	1.30	0.35	0.58	-.28
Missoula	0.23	-0.72	0.92	0.02	1.04	.09	0.34	-0.51	0.97	.17	0.97	0.15	0.12	-.78
CENTRAL DIVISION														
Babb	0.10	-1.08	0.44	-0.55	0.31	-.63	1.24	----	0.71	-.11	0.69	-0.42	0.53	-1.13
Dillon Normal Sch.	0.15	-0.69	0.35	-0.45	0.95	.21	0.62	-0.21	0.57	-.25	0.20	-0.96	0.51	-1.17
Fort Benton	0.04	-0.68	0.70	0.11	0.63	.12	0.99	0.33	0.78	.29	1.08	-0.54	0.32	-0.80
Great Falls	.08	-0.78	0.39	-0.29	0.53	-.12	1.40	----	0.79	.24	1.11	0.25	0.41	-.74
Havre	.09	-0.58	-0.26	0.35	-0.52	-.09	0.44	-0.29	0.49	-.03	0.41	-0.10	0.05	-.94
Helena WBO	.05	-0.56	0.61	0.16	0.80	.33	0.66	0.10	0.59	.22	0.69	-0.10	0.61	-.51
Livingston	.21	-0.96	0.67	-0.13	0.88	.28	1.14	----	0.42	-.12	1.03	0.17	1.34	.02
Lewistown Arpt.	.01	-0.35	1.02	0.81	----	----	----	----	----	----	----	----	----	----
Mystic Lake	.24	-1.60	1.13	-0.45	1.77	.73	1.40	----	1.69	.61	3.32	1.28	1.44	-1.30
EASTERN DIVISION														
Billings #2	.01	-1.30	0.18	0.18	0.73	.23	1.46	0.83	0.48	.06	0.69	-0.15	0.36	-.94
Circle	.06	-0.79	0.63	.06	0.45	-.30	0.57	----	0.31	-.30	0.24	-0.76	0.0	-1.14
Frazer	.03	-0.85	0.63	.10	0.95	.56	0.55	0.14	0.46	-.12	0.25	-0.45	T	-0.96
Malta	.00	-0.73	0.25	-.16	0.58	.12	0.16	-0.31	0.28	-.09	0.17	-0.37	T	-.80
Mildred	T	-0.73	1.67	1.30	0.41	..09	0.98	0.64	0.41	.14	0.34	-0.08	0.14	-1.03
Medicine Lake	0.16	-0.59	1.15	0.82	0.48	.20	0.08	-0.23	0.14	-.18	0.94	0.53	0.06	-.83
Miles City	T	-0.90	0.49	-.08	0.31	-.32	0.85	0.19	----	----	0.51	-0.35	0.29	-.83
Fort Peck	T	-0.75	0.14	-.33	0.16	-.12	0.16	----	0.23	-.04	0.15	-0.35	T	-1.08

NOTE: Departure from normal figures without a minus sign (-) are plus.

MONTANA SNOW SURVEYS May 1, 1949

MISSOURI BASIN

DRAINAGE BASIN AND SNOW COURSE **	State	No.	Elev.	Date of Survey 1949	Snow Depth (In.) 1949	SNOW MEASUREMENTS Water Content (Inches) May 1 1949	Change Since * April 1	Past Records 1948	Past Records 1947	Average Data May 1 Avg.	Average Data May 1 %Avg.	Years of Record
Jefferson River												
Elk Horn	Montana	11	8450	5/2	14.8	5.5	-8.1	8.8	----	5.1	108	
Gibbons Pass	"	13	7100	4/29	48.1	22.9	-6.1	21.3	25.4	18.4	124	12
Goldstone	"	22	8100	5/2	38.0	15.8	-3.6	----	----	----	----	1
Jahnke Creek	"	24	7340	5/2	12.6	5.4	-9.0	----	----	----	----	1
Lakeview Canyon	"	15	6930	5/5	6.8	2.2	-10.5	----	----	----	----	1
Lakeview Ridge	"	14	7400	5/5	6.6	2.4	-7.6	----	----	----	----	1
Pipestone Pass	"	14	7200	4/29	7.4	1.0	-6.9	----	----	1.7	59	9
Selway Junction	"	21	6800	5/2	27.5	12.0	-0.8	----	----	----	----	1
Terrell Creek	"	20	6650	5/2	0	0	-6.0	----	----	----	----	1
Madison River												
Hebgen Lake	Montana	7	6550	5/1	2.6	1.2	-13.4	7.4	1.6	2.5	48	14
Norris Basin	"	7	7500	5/1	6.1	2.5	-7.8	----	----	----	----	
21 Mile	"	6	7150	5/2	26.7	12.7	-7.8	12.6	14.6	10.0	126	14
West Yellowstone	"	8	6700	5/2	8.9	4.1	-9.0	4.5	3.7	3.1	76	14
Gallatin River												
Devil's Slide	Montana	1	8100	5/2	52.8	20.2	-0.6	30.6	28.2	21.2	95.5	14
Hood Meadow Ext.	"	2	6600	5/3	5.4	1.7	-9.2	9.9	7.3	4.4	38.6	14
21 Mile	"	6	7150	5/2	26.7	12.6	-7.8	----	14.6	10.1	126	14

* Location of course shown on Index Map

** Change since April 1 indicates the LOSS (-) or GAIN (no sign) during the month of April.

MONTANA SNOW SURVEYS May 1, 1949

MISSOURI BASIN

DRAINAGE BASIN AND SNOW COURSE **	State	No.	Elev.	Date of Survey 1949	Snow Depth (In.) 1949	SNOW MEASUREMENTS Water Content (Inches) May 1 1949	Change Since * April 1	Past Records 1948	Past Records 1947	Average Data May 1 Avg.	Average Data May 1 %Avg.	Years of Record
Main Stem Above Great Falls												
Chessman	Montana	18	6200	5/4	0	0	-7.6	4.6	1.2	1.3	----	13
Kings Hill	"	25	7950	5/3	33.2	12.8	-4.1	14.6	----	10.5	122	8
Pipestone Pass	"	14	7200	4/29	7.4	1.0	-6.9	----	----	1.7	59	9
Rimini, Lower	"	15	6250	5/2	0.6	-0.2	-8.6	2.1	2.1	1.6	13	13
Rimini, Middle	"	16	6800	5/3	10.2	3.5	-9.3	8.9	11.8	6.3	56	13
Rimini, Upper	"	17	8000	5/3	19.0	7.1	-7.7	14.6	14.6	9.7	73	13
Stemple Pass	"	16	6900	5/4	18.2	6.3	-7.2	8.3	7.8	5.1	124	14
Marias River												
Marias Pass	Montana	21	5250	5/1	27.3	12.1	-9.3	15.3	11.5	7.8	155	14
Snow Lab. 13	"	16	5240									
Sun River												
Goat Mountain	Montana	20	7000	5/2	15.3	5.7	-9.7			3.2	178	6
Yellowstone River												
Canyon	Wyoming	2	7750	5/1	26.3	9.7	-5.2	10.8	----	----	----	
Lake	"	1	7850	5/1	21.3	7.6	-7.6	----	----	----	----	
Sylvan Pass	"	32	7100		25.0	11.5						
Independence	Montana	9	8000	5/1	38.7	16.5	----	----	----	----	----	1
Clark Fork of Yellowstone												
Cook City	Montana	11	7890	4/29	11.7	3.6	-7.0	----	----	----	----	
St. Mary River												
Iceberg Lake #3	Montana	23	6500	5/5	44.8	21.1	----	----	----	----	----	
Mount Allen #7	"	21	7000	5/4	84.9	39.8	----	----	----	----	----	
Piegan Pass #4	"	20	5000	5/4	25.2	10.1	----	----	----	----	----	
Piegan Pass #6	"	19	6500	5/4	66.9	31.1	----	----	----	----	----	
Ptarmigan #8	"	22	5800	5/5	72.0	34.1	----	----	----	----	----	
				AVERAGE		27.5	----	31.5	33.5	24.6	112	26

** Location of course shown on Index Map

* Change since April 1 indicates the LOSS (-) or GAIN (no sign) during the month of April.

MONTANA SNOW SURVEYS May 1, 1949

COLUMBIA BASIN — SNOW MEASUREMENTS

DRAINAGE BASIN AND SNOW COURSE **	State	No.	Elev.	Date of Survey 1949	Snow Depth (In.) 1949	Water Content (Inches) May 1 1949	Change Since * April 1	Past Records 1948	Past Records 1947	Average Data May 1 Avg.	Average Data May 1 %Avg.	Years of Record
Kootenai River												
Baree Mountain	Montana	1	6000	5/2	105.0	50.1	-5.1	47.2	51.8	36.7	137	12
Bluebird Basin	"	2	6800	5/2	88.1	36.7	-1.4	----	----	33.5	110	10
Ferguson	Canada		3000	4/30	23.0	11.7	-9.4	18.5	14.3	----	----	2
Fernie	"		3500	5/1	NO SNOW		-7.7	3.9	0			2
Gray Creek	"		5100	4/29	47.2	18.4	-2.1	20.0	----	----	----	2
Marble Canyon	"		5000	4/29	25.8	10.2	-2.8	10.3	4.6	----	----	3
Gerrard	"		6000		NO SNOW		-12.5	----	----	----	----	
Red Mountain	Montana	10	6000	5/2	39.7	16.3	-5.0	16.2	18.8	14.1	116	12
Sandon	Canada		3500	4/30	NO SNOW		-12.8	4.2	0	----	----	2
Sinclair Pass	"		4500	4/30	0.5	0.2	-3.4	0.8	T	----	----	2
Sullivan Mine	"		5100	4/30	19.7	7.9	-7.3	9.9	----	----	----	2
Upper Elk River	"		----	4/30	NO SNOW		-8.0	5.5	----	----	----	2
Upper Clark Fork												
Chessman	Montana	1	6200	5/4	0	0	-7.6	4.6	1.2	1.3	----	13
Pipestone Pass	"	5	7200	4/29	7.4	1.0	-6.9	----	----	1.7	59	9
Skalkaho	"	6	7258	4/28	48.8	24.8	-9.8	26.7	30.7	21.9	123	12
Slide Rock-	"	8	7100	5/2	32.2	12.2	-6.6	----	----	----	----	
Stemple Pass	"	10	6900	5/4	18.2	6.3	-7.2	8.3	7.8	5.1	124	14
Storm Lake #2	"	11	7780	4/28	33.1	12.7	-3.3	21.2	18.0	13.8	92	10
Stuart Mt. #1	"	12	6500	5/3	51.4	22.2	-1.2	31.1	31.7	26.1	85	12
Rimini, Lower	"	14	6250	5/2	0.6	0.2	-8.6	2.1	2.1	1.6	13	13
Rimini, Middle	"	15	6800	5/3	10.2	3.5	-9.3	8.9	11.8	6.3	56	13
Rimini, Upper	"	16	8000	5/3	19.0	7.1	-7.7	14.6	14.6	9,7	73	13

**Location of course shown on Index Map

* Change since April 1 indicates the LOSS(-) or GAIN (no sign) during the month of April

MONTANA SNOW SURVEYS May 1, 1949

COLUMBIA BASIN — SNOW MEASUREMENTS

DRAINAGE BASIN AND SNOW COURSE **	State	No.	Elev.	Date of Survey 1949	Snow Depth (In.) 1949	Water Content (Inches) May 1 1949	Change Since * April 1	Past Records 1948	Past Records 1947	Average Data May 1 Avg.	Average Data May 1 %Avg.	Years of Record
Bitterroot River												
Gibbons Pass	Montana	2	7100	4/29	48.1-	22.9	-6.1	21.3	25.4	18.4	124	12
Packers Mdw.	"		5700	4/30	40.8	24.7	-9.7	21.9	13.5	12.7	212	12
Skalkaho	"	7	7258	4/28	48.8	24.8	-9.8	26.7	30.7	21.9	113	12
Stuart Mt. #1	"	8	7400	5/3	51.4	22.2	-1.2	31.1	31.7	26.0	85	12
Flathead River												
Desert Mountain	Montana	3	5600	5/2	26.6	10.8	-4.6	14.9	16.0	8.3	130	12
Hell Roaring Cr.	Div."	6	5770	5/2	56.4	26.7	-6.3	31.0	32.0	25.7	104	7
Marias Pass	"	10	5250	5/1	27.3	12.1	-9.3	15.3	11.5	7.8	155	14
Pend Oreille River												
Baree Mountain	Montana	1	6000	5/2	105.0	50.1	-5.1	47.2	51.8	36.7	137	12
Benton Springs	Idaho		4900	5/2	40.0	26.4		20.6	6.0	11.7		12
Freezeout Mt.	Montana	6	7000	5/2	80.3	36.3	-1.3	30.3	40.6	26.5	137	11
Lookout	Idaho		5250	4/29	74.0	36.6	-2.1	34.8	27.2	22.0	156	12

**Location of course shown on Index Map

* Change since April 1 indicates the LOSS (-) or GAIN (no sign) during the month of April.

APPENDIX

Location of snow survey courses in adjacent basins and not shown on INDEX MAP, but shown in tabulated data.

COURSE	STATE	NO.	ELEV.	LOCATION Sec. Twp. Range or Lat. and Long.	BASIN
JEFFERSON RIVER					
Camp Creek	Idaho		6800	21 13N 36E	Snake River
MADISON RIVER					
Valley View	Idaho		6500	7 15N 44E	Snake River
Big Springs	Idaho		6500	34 14N 44E	Snake River
YELLOWSTONE RIVER					
Canyon	Wyoming	2	7750	44-54 110-37	Yellowstone Park
Lake	Wyoming	1	7850	44-44 110-30	Yellowstone Park
Lupine Creek	Wyoming	3	7300	44-54 110-37	Yellowstone Park
Sylvan Pass	Wyoming	32	7100	12 52N 110W	Shoshone River
KOOTENAI RIVER					
Ferguson	Canada		3000	50-40 117-30	Upper Kootenai
Fernie	Canada		3500	49-31 115-01	Upper Kootenai
Gray Creek	Canada		5100	49-37 116-41	West Kootenai
Kimberly	Canada		3750	49-41 115-59	East Kootenai
Gerrard	Canada		6000	50-36 117-16	Upper Kootenai
Marble Canyon	Canada		5000	51-12 116-09	East Kootenai
Nelson	Canada		3050	49-25 117-14	West Kootenai
Sandon	Canada		3500	49-59 117-13	Upper Kootenai
Sinclair Pass	Canada		4500	50-40 115-58	East Kootenai
Smith Creek	Idaho		4800	29 64N 3W	Kootenai
Sullivan Mine	Canada		5100	49-43 116-01	East Kootenai
Upper Elk River	Canada		4400	50-01 114-56	East Kootenai
PEND OREILLE RIVER					
Benton Springs	Idaho		4900	30 28N 3W	Priest River
Lookout	Idaho		5250	4 47N 6E	Clark Fork
Nelson	Canada		3050	49-25 117-14	West Kootenai
Smith Creek	Idaho		4800	29 64N 3W	Kootenai
ST. MARY RIVER					
Iceberg Lake	Montana	23	6000	48-50 113-42	Saskatchewan River
Mount Allen	Montana	21	7000	48-44 113-40	Saskatchewan River
Piegan Pass #4	Montana	20	5000	48-46 113-40	Saskatchewan River
Piegan Pass #6	Montana	19	6500	48-45 113-42	Saskatchewan River

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FEDERAL-STATE
COOPERATIVE SNOW SURVEYS and
IRRIGATION WATER FORECASTS

For

MONTANA

MAY 15, 1949

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U.S. DEPARTMENT OF AGRICULTURE

by

Montana Agricultural Experiment Station
and
Division of Irrigation, Soil Conservation Service
United States Department of Agriculture

in cooperation with

U.S. Forest Service....U.S. National Park Service....U.S. Bureau of Reclamation....U.S. Geological Survey and State Engineer of Montana

and

Comptroller of Water Rights, British Columbia

MAY 15 SUMMARY
OF IRRIGATION WATER SUPPLY FOR MONTANA

Snow survey measurements were made on or about the 15th of May, at key courses in the Upper Missouri and Upper Columbia River Basins to obtain additional data on irrigation water supply. Although there is little or no comparative data these measurements show that on the high elevation courses there is a good supply of stored water for this season as of May 15. The Upper Columbia Basin shows a better coverage than does the Upper Missouri. Narrative data by some snow surveyors indicate that the north exposed slopes are well covered with snow at this date.

The ideal melt season during April and the first 15 days of May has brought the snow melt water out of the mountains without exceptional high peak flows except on the Upper Kootenai where a short peak above bankful capacity was reached. During the first week in May, some lowlands were enundated. Aside from bankful capacities being exceeded in local areas, the danger of extremely high peak flows has passed from the snow melt water in the Upper Columbia. However, a prolonged and heavy rain would cause considerable damage at this time in this basin. On the Upper Missouri Basin, with considerable snow at high elevations and approaching the rainy season of June; the probability of high peak flows still exists in local areas.

MONTANA SNOW SURVEYS May 15 , 1949

COLUMBIA BASIN

DRAINAGE BASIN AND SNOW COURSE **	State	No.	Elev.	Date of Survey 1949	Snow Depth (In.) 1949	SNOW MEASUREMENTS Water Content (Inches) May 15 1949	Per Cent Density	Change Since May 1*	May 1 1948	May 1 1949
Upper Columbia River										
Revelstoke	Canada		6000	5/14	67.6	47.1	69	10.5	49.1	36.6
Glacier	"		4100	5/15	8.3	4.5	55	-8.1	27.2	12.6
Kicking Horse	"		5400	5/14	NO	SNOW	----	-2.5	10.3	2.5
Marble Canyon	"		5000	5/14	2.5	1.1	44	-9.1	12.1	10.2
Sullivan Mine	"		5100	5/15	2.4	0.9	37	-7.0	9.9	7.9
Sinclair Pass	"		4500	5/15	NO	SNOW	----	-0.2	0.8	0.2
Kootenai River										
Baree Mountain	Montana	1	6000	5/16	75.9	40.8	54	-9.3	47.2	50.1
Bluebird Basin	"	24	6800	5/16	53.1	24.3	46	-12.4	----	36.7
Upper Clark Fork										
Storm Lake	Montana	11	7780	5/12	20.9	7.7	37	-5.0	21.2	12.7
Slide Rock Mt.	"	8	7100	5/16	15.0	4.8	32	-7.4	----	12.2
Stemple Pass	"	16	6900		NO	SNOW				
Stuart Mt.	"	13	7400	5/16	14.8	7.5	51	-14.7	31.1	22.2
Skalkaho Summit	"	7	7258	5/17	22.4	14.4	61	-10.4	26.7	24.8
Bitterroot River										
Packers Meadow	Idaho		5700	5/18	3.2	2.0	62	-22.7	21.9	24.7
Stuart Mt.	Montana	13	7400	5/16	14.8	7.5	51	-10.4	26.7	24.8
Flathead River										
Desert Mt.	Montana	3	5600	5/16	NO	SNOW	----	-10.9	14.9	10.9
Baree Mt.	"	1	6000	5/16	75.9	40.8	54	-9.3	47.2	50.1
Benton Springs	Idaho		2344	5/18	NO	SNOW	----	-26.4	20.6	26.4
Freezeout	Montana	6	7000	5/16	44.8	24.2	54	-12.1	30.3	36.3
Hell Roaring Cr.	"	6	5770	5/17	18.9	9.8	53	-16.9	31.0	26.7
Lookout	Idaho		5250	5/17	28.0	15.6	56	-21.0	34.8	36.6

* Change since May 1 indicates the LOSS (-) or GAIN (no sign) during the month of May.

** Location of course shown on Index Map.

MONTANA SNOW SURVEYS May 15 , 1949

MISSOURI BASIN

DRAINAGE BASIN AND SNOW COURSE **	State	No.	Elev.	Date of Survey 1949	Snow Depth (In.) 1949	SNOW MEASUREMENTS Water Content (Inches) May 15 1949	Per Cent Density	Change Since May 1 *	May 1 1948	May 1 1949
Jefferson River										
Jahnke Creek	Montana	24	7340	5/16	NO	SNOW	----	----	----	12.6
Goldstone	"	22	8100	5/16	21.2	12.4	58	-3.4	----	15.8
Terrell Creek	"	20	6650	5/16	NO	SNOW	----	0.0	----	0
Selway Junction	"	21	6800	5/16	NO	SNOW	----	-12.0	----	12.0
Elk Horn	"	11	8450	5/13	NO	SNOW	----	-5.5	8.8	5.5
Madison River										
Twenty-One Mile	Montana	6	7150	5/17	2.7	1.3	48	-11.4	12.6	12.7
Gallatin River										
Twenty-One Mile	Montana	6	7150	5/17	2.7	1.3	48	-11.4	12.6	12.7
Missouri Main Stem										
Kings Hill	Montana	25	7950	5/16	10.8	4.3	40	-8.5	14.6	12.8
Stemple Pass	"	16	6900	5/16	NO	SNOW	----	-6.3	8.3	6.3
Marias River										
Marias Pass	Montana	21	5250	5/16	2.2	1.0	45	11.1	15.3	12.1
Yellowstone River										
Canyon #2	Wyoming	2	7750	5/15	1.5	0.5	30		10.8	9.7
Lake	"	1	7850	5/15	1.0	0.4	25		----	7.6

* Change since May 1 indicates the LOSS (-) or GAIN (no sign) during the month of May.
** Location of course shown on Index Map.